Truthmakers for what we say

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Lecture 2

UCL

Truthmakers for what we say

The story so far

Truthmakers for what we say

Natural languages have constructions that link propositions to their truthmakers. Investigating those constructions leads to a well-motivated notion of truthmaking that also covers cases where our intuitions give out.

Direct windows into truthmaking

- Adverbial quantification
- Davidsonian event semantics
- Event nominalizations
- Direct perception reports
- Pronouns referring to truthmakers

From propositions to truthmakers

A situation s is a truthmaker for a proposition p (s exemplifies p) iff whenever there is a part of s where p is not true, then s is a minimal situation where p is true.

Kratzer 1990, 2002, 2007 (last edition 2019), 2012.

Case study: Adverbial quantification

A simple notion of truthmaking interacts with general constraints on quantifier domains.

- Pressure for spatiotemporal connectedness.
- Pressure for distinctness (no overlap) of the things quantified over.
- Maximalization for plural quantification.

Minimalization

- Every time I break a teapot or a coffee cup I have to pay a £5 fine.
- Suppose I drop a tray with a teapot and a coffee cup on it. Both items break simultaneously. What's my fine?
- Quantification domain: Minimal situations where I break one or the other.

Spatiotemporal connectedness

- Those church bells rang on five occasions (last year).

- Quantification domain: maximal spatiotemporally connected truthmakers for ‘those church bells are ringing’.

Distinctness

- Every time I sell two teapots on a single day, I am entitled to a £5 bonus.

- If I sell a total of four teapots on some day. I can ask for a £10 bonus, not for a £30 bonus.

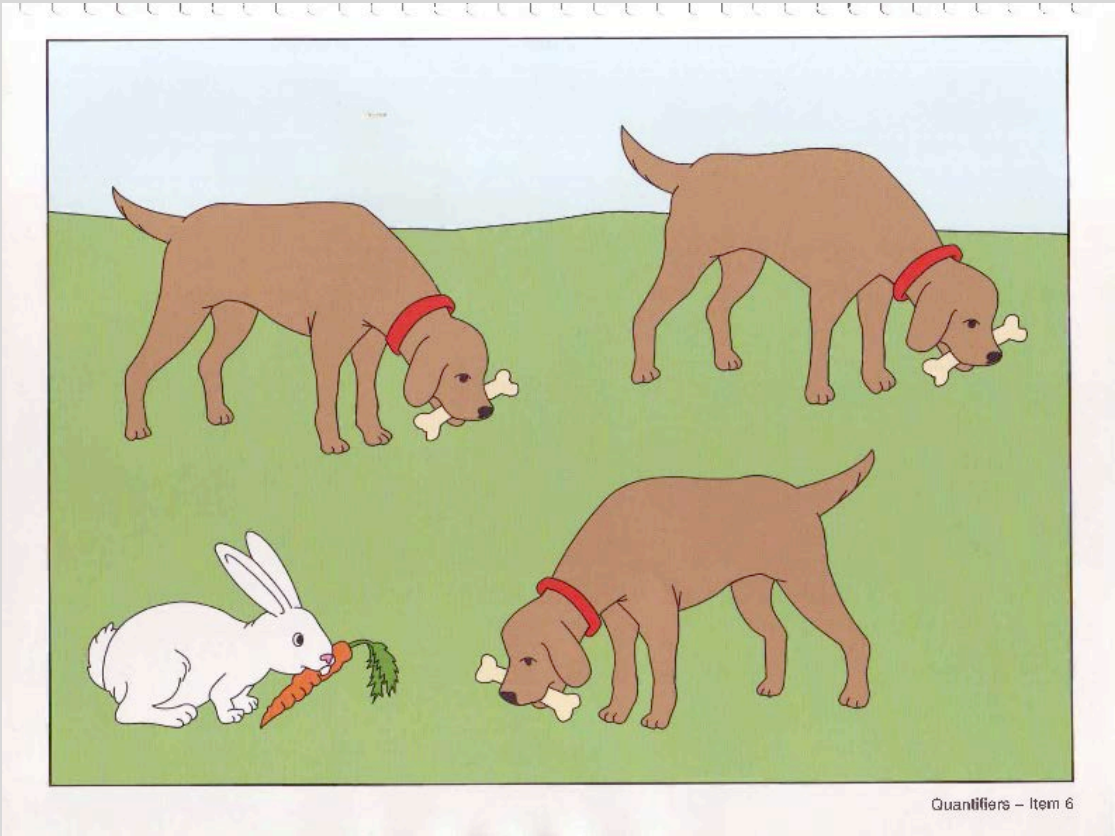
- Possible quantification domains: {1+2, 3+4}, {1+3, 2+4}, {1+4, 2+3}.

Maximalization

- Every time I sell two or more teapots on a single day, I am entitled to a £5 bonus.
- Suppose I sell a total of four teapots on a particular day. What's my bonus?
- Quantification is over days where the total number of teapots sold is at least two.

Truthmakers for what we say

What other areas might truthmaking play a role in?

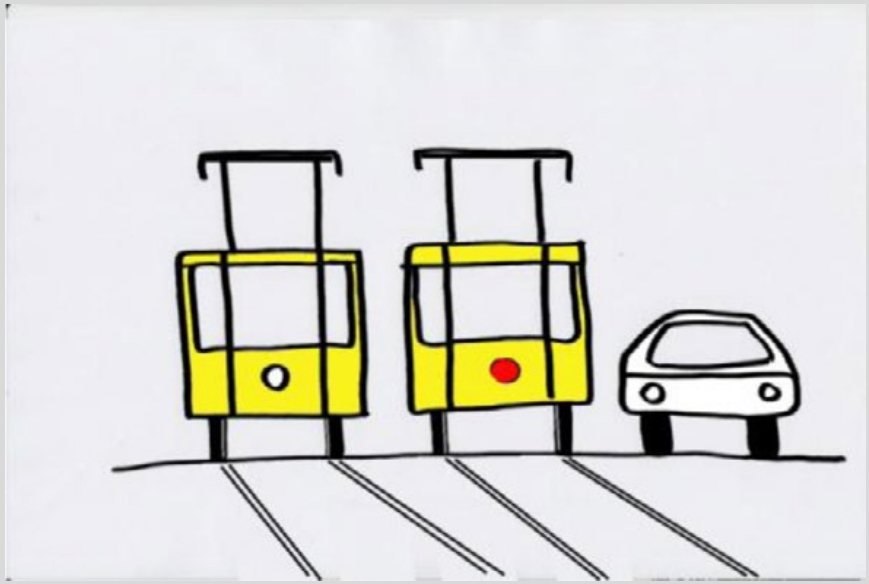


Children's interpretation of quantification

Is every dog eating a bone?

Credit: Seymour, Roeper, de Villiers 2000.

Every tram is yellow



Credit: K. É. Kiss & T. Zétény. 2017. Glossa 2(1): 38.

Scalar implicatures

Lucie shows some of the symptoms of mumps.
Inference: She doesn’t show all of the symptoms.

Lucie is studying or she is working in the library.
Inference: She isn’t doing both.

Lucie mentioned two of those references.
Inference: She didn’t mention three, four, …

The origin of scalar implicatures

Truthmakers or linguistic alternatives?

The majority view

Scalar implicatures come about by comparing linguistic alternatives. What a speaker actually chose to say is compared to certain alternatives she could have chosen, but didn't.

Many proponents, including Horn 1972 and Chierchia, Fox, & Spector 2012.

Source of alternatives: Horn Scales

<and, or>

<all, many, some>

<always, often, sometimes>

<must, may>

<… three, two, one>

- Laurence R. Horn. 1972 UCLA Dissertation.

Excluding stronger alternatives

Lucie shows some of the symptoms of mumps.

¬ Lucie shows all of the symptoms of mumps.

Lucie is studying or she is working in the library.

¬ Lucie is studying and working in the library.

Lucie mentioned two of those references.

¬ Lucie mentioned three, four, … of those references.

An ongoing debate

- One position: The exclusion of stronger alternatives follows from general principles of rational behavior in the spirit of Grice.

- Another position: The exclusion of stronger alternatives is a grammatical process executed by syntactically represented exhaustivity operators.

A minority view

The perception of scalar implicatures comes about by our taking the situations we talk about or quantify over to be the truthmakers (exemplifiers) of what we say.

Kratzer 2003, 2007 (last edition 2019); Fine 2017.

The origin of scalar implicature

Scalar implicature arises from the presupposition that a statement is not merely true but exactly true.

Fine 2017, 574.

Question still to answer: Exactly true of what?

A very different conceptualization

On the truthmaker account, no comparisons between linguistic alternatives play any role in the generation of what we perceive as scalar implicatures.

If successful, the truthmaker account avoids the thorniest part of the linguistic alternatives account: the stipulation of Horn scales.

The argument

There is independent evidence for the role of truthmakers in natural language semantics – we have seen some of it.

Once the role of truthmakers in natural language semantics is recognized, a substantial part of what has been traded under the label ‘scalar implicatures’ emerges without further stipulations.

Getting clear about what needs to be explained

Controlling for contrastive focus

Contrastive focus

Contrastive focus introduces alternatives for any kind of expression, including scalar items.

In British and American English contrastive focus is expressed prosodically via a high level of prominence usually including a pitch accent.

Bertha & Clyde

Bertha and Clyde are good friends who love to spend time with each other. They have no intention to ever get married until Clyde finds out that he will inherit a lot of money if he is married by the age of 30. They reluctantly decide to marry after all.

After Dretske 1972.

Contrastive focus

(1) The reason Clyde married BERTHA was to qualify for the inheritance. False.

(2) The reason Clyde MARRIED Bertha was to qualify for the inheritance. True.

Inferences from contrastive focus

(1) The reason Clyde married BERTHA (and not Amy, Cindy, Dora, …) was to qualify for the inheritance.

(2) The reason Clyde MARRIED (rather than dated, hung out with …) Bertha was to qualify for the inheritance.

Contrastive focus

Focus alternatives are relied on by focus sensitive operators like *only* and *even*, but may also trigger presuppositions and implicatures without the presence of overt operators.

Seminal work: Rooth 1992. A lot of work since.

No evidence for scalar implicatures

Whenever the professor demanded that we solve SOME of the difficult problems, I managed to do what she asked, but not when she asked us to solve ALL of the difficult problems.

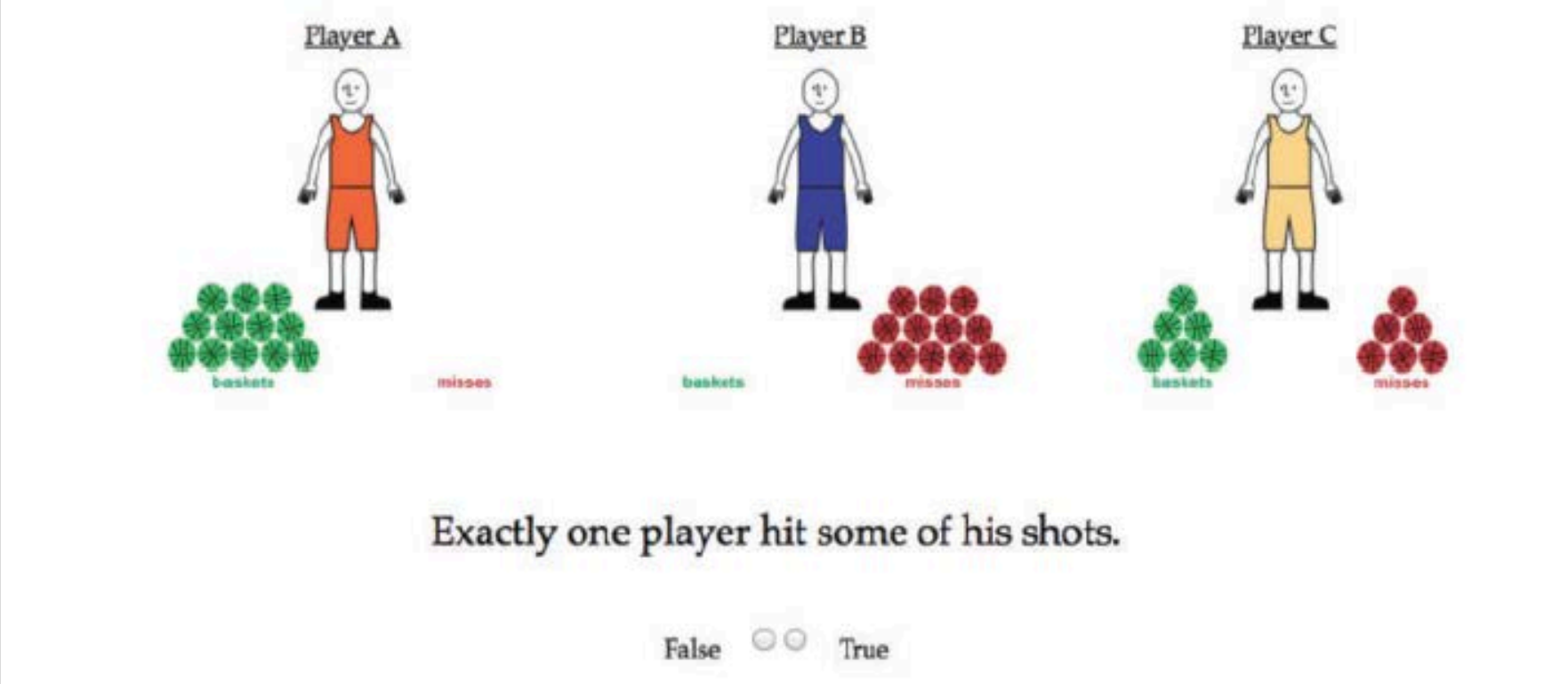
Spector 2013, 290. Sauerland 2014,87. Emphasis is mine.

No evidence for scalar implicatures

Whenever the professor demanded that we solve SOME of the difficult problems (and didn't demand that we solve ALL of them), I managed to do what she asked, but not when she asked us to solve ALL of the difficult problems.

Spector 2013, 290. Sauerland 2014,87. Emphasis is mine.

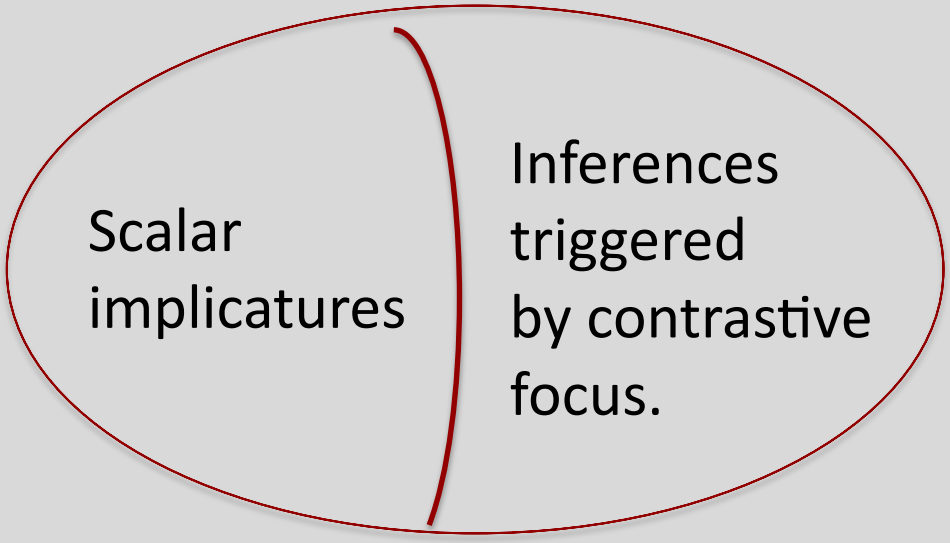
No evidence for scalar implicatures



Source: Potts et al. 2015

Control for contrastive focus!

If a scalar item is contrastively focused you can't tell whether a perceived scalar implicature is produced by contrastive focus or the scalar item itself.



Control for contrastive focus

“I have argued that, regarding “embedded implicatures”, the key distinction to be made is that between contrastive and non-contrastive environments. In a contrastive environment, upper-bounded construals may occur in just about any embedded position.” Geurts 2010, 189.

Quantifying over truthmakers

Creating the illusion of embedded implicatures

Illusion of exclusive disjunction

Every time I break a teapot or a coffee cup I have to pay a £5 fine.

$\lambda s\ \exists x\ (\text{teapot}(x)(w_0)\ \&\ \text{break}(x)(I)(s))\ \vee$

$\exists x\ (\text{coffee cup}(x)(w_0)\ \&\ \text{break}(x)(I)(s))$

Inclusive disjunction & minimalization

$\lambda s\ \exists x\ (\text{teapot}(x)(w_s)\ \&\ \text{break}(x)(I)(s))\ \vee$
$\exists x\ (\text{coffee cup}(x)(w_s)\ \&\ \text{break}(x)(I)(s))$

Truthmakers: minimal situations where I break either a teapot or a coffee cup. In none of those situations do I break both.

Minimalization creates the illusion of an embedded exclusive disjunction.

Illusion of embedded implicatures

Every time I sell a teapot or four coffee cups, I am entitled to a £5 bonus.

Truthmakers: minimal situations where I sell a single teapot or four coffee cups. None of those situations has more than one teapot or more than four coffee cups, let alone both a teapot and coffee cups in it.

Illusion of implicature cancellation

There has never been a teapot or a coffee pot in this kitchen.

If there has never been a situation with just a coffeepot or just a teapot, there can't have been a situation with both. Every situation with a teapot and a coffee pot has a part with just a tea pot and a part with just a coffee pot.

The implicature focus generalization

(1) There has never been a teapot or a coffee pot in this kitchen.

(2) There has never been a teapot OR a coffee pot in this kitchen.

Scalar implicatures can be embedded under a downward entailing operator only if the scalar item is contrastively focused. After Fox & Spector 2018.

Plural quantification

Every time I sell two teapots, I am entitled to a £5 bonus.

$\lambda s\ \exists x\ (teapots(x)(w_s)\ \&\ \#_{teapot}(x) = 2\ \&\ sell(x)(I)(s))$

The existence of a plurality of exactly 2 sold teapots in a situation is compatible with the existence of pluralities with 3 or more sold teapots in the same situation.

Plural quantification & minimalization

$\lambda s\ \exists x\ (teapots(x)(w_s)\ \&\ \#_{teapot}(x) = 2\ \&\ sell(x)(I)(s))$

Truth makers: minimal situations where I sell two teapots. In none of those situations do I sell 3 or more teapots.

Minimalization creates the illusion of an embedded implicature that excludes situations where I sell three or more teapots.

Illusion of implicature cancellation

There have never been two teapots in this kitchen.

If there has never been a situation with exactly two teapots, there can’t have been a situation with three (or more). Every situation with three or more teapots has a part with exactly two.

The implicature focus generalization

(1) There have never been two teapots in this kitchen.

(2) There have never been TWO teapots in this kitchen.

Scalar implicatures can be embedded under a downward entailing operator only if the scalar item is contrastively focused. After Fox & Spector 2018.

Challenges

I’ll come back to those

An elephant in the room

What are we going to say about *some*? How could minimalization ever give us the inference from *some* to *some and not all*?

Another elephant in the room

- Every time you break a cup or a saucer or both, we will charge you £5.

- Equivalent

  $p \vee q$

  $p \vee q \vee (p \& q)$

- Minimalization seems to yield the wrong result.

Describing salient situations

Austin 1950

The origin of scalar implicature

Scalar implicature arises from the presupposition that a statement is not merely true but exactly true.

Fine 2017, 574.

Exactly true of what?

J. L. Austin: Truth

“A statement is said to be true when the historic state of affairs to which it is correlated by the demonstrative conventions (the one to which it "refers") is of a type with which the sentence used in making it is correlated by the descriptive conventions.” J. L. Austin 1950, 116.

Odd statements

One of her feet is in the water.

Some of her toes are in the water.

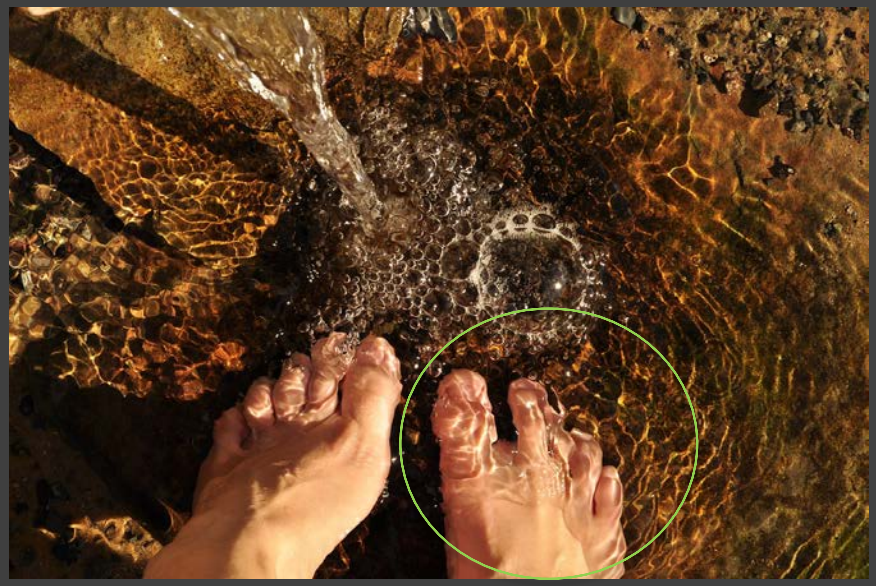
Odd statement

Her right foot or her left toes are in the water.

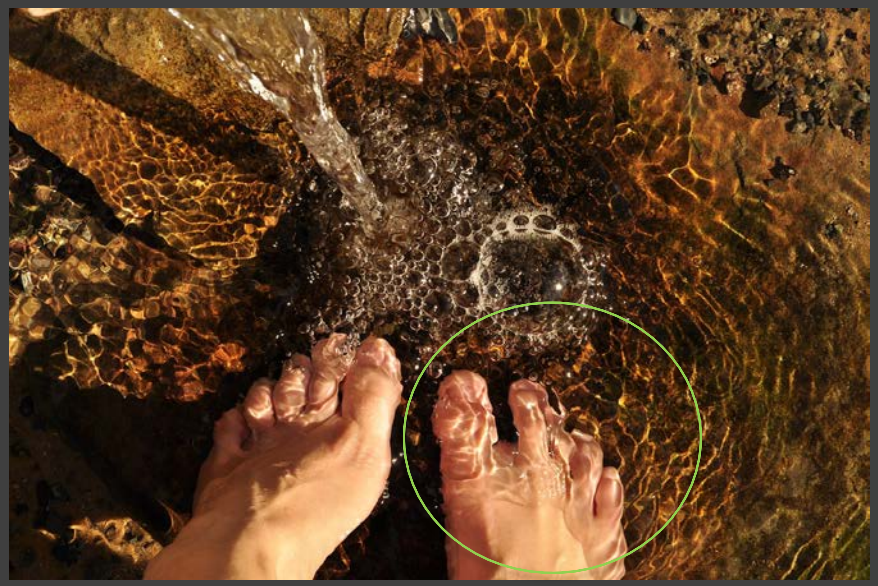
True, but not exactly true

Each of the odd statements was true in the shown situation.

But the shown situation was (very blatantly) not a truthmaker for any of the statements given.



Let’s zoom in on a smaller situation, then, and talk about that.



Still odd

Five of her toes are in the water.

I wasn’t talking about that

“You never take me out for ice cream any more,” Zina complained recently. I observed that we had been out for ice cream the day before, on her birthday. “I know,” she said, “I wasn’t talking about that.”

Yablo 2014, 7.

Not just my choice

I can’t just choose to talk about smaller situations to get away with grossly misleading statements.

What CAN I talk about, then?

The question under discussion

Where topic situations might come from

Questions under discussion

"Questions under discussion (QUD) is an analytic tool that has recently become more and more popular among linguists and language philosophers as a way to characterize how a sentence fits in its context. The idea is that each sentence in discourse addresses a (often implicit) QUD either by answering it, or by bringing up another question that can help answering that QUD." Benz & Jasinskaja 2017.

Questions under discussion

v. Stutterheim & Klein 1989, van Kuppevelt 1995, Ginzburg 1996, Roberts 1996, Büring 2003, Beaver & Clark 2008.

The Semantics of Questions

Groenendijk & Stokhof 1982, 1984 on questions & exhaustivity.

van Rooij & Schulz 2004, Schulz & van Rooij 2006 on questions, exhaustivity, & implicatures.

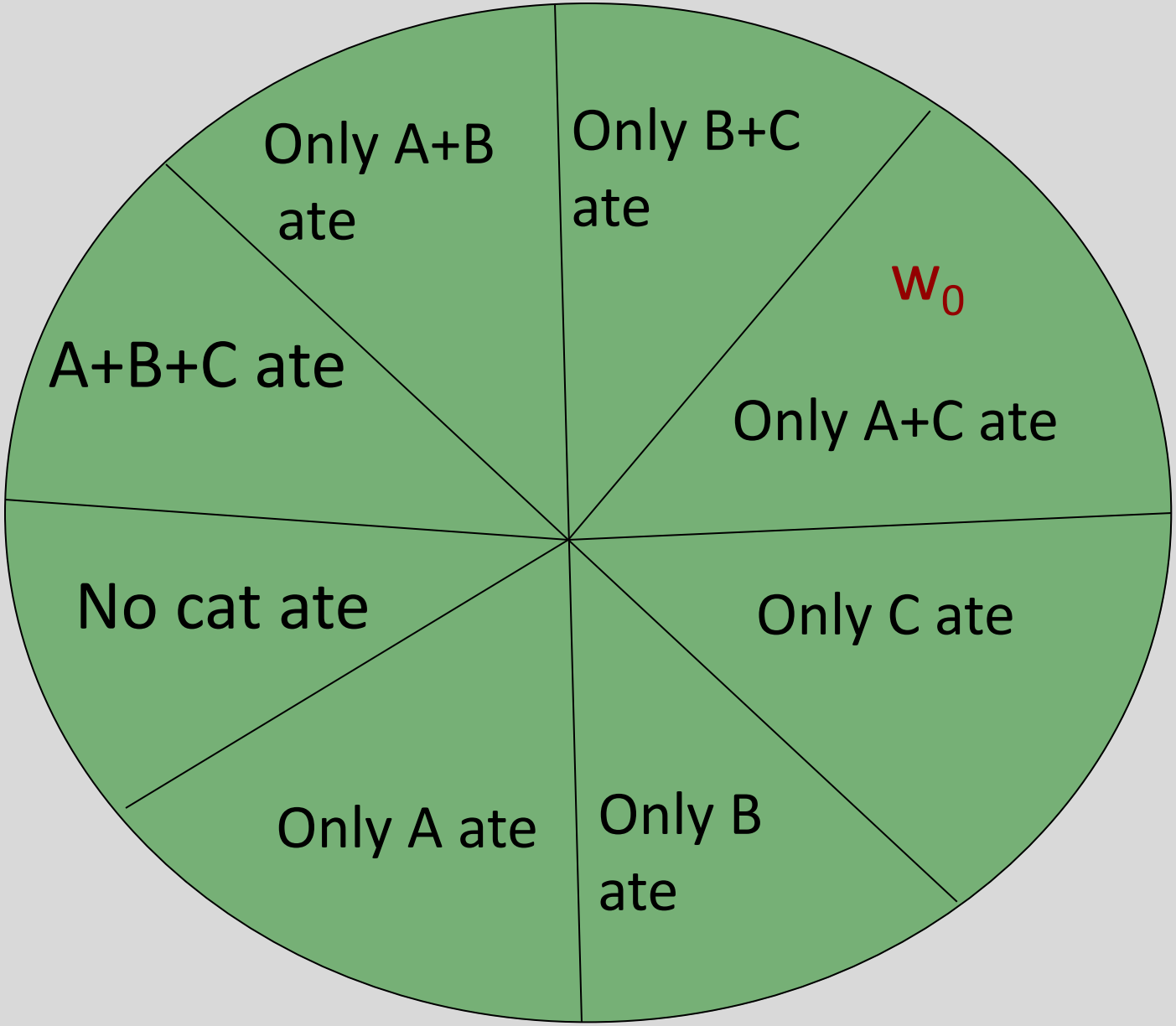
Lewis 1988 & Yablo 2014 on subject matter.

Question intension

Which cats ate?

$\lambda w \lambda w' (\lambda x (cat(x)(w) \ \& \ ate(x)(w)) =$

$\lambda x (cat(x)(w') \ \& \ ate(x)(w')))$


Only A+B ate
Only B+C ate
w_0
A+B+C ate
Only A+C ate
No cat ate
Only C ate
Only A ate
Only B ate

Question extension

(The checklist shows) which cats ate.

$\lambda w\ (\lambda x\ (cat(x)(w)\ \&\ ate(x)(w)) =$

$\quad \lambda x\ (cat(x)(w_0)\ \&\ ate(x)(w_0)))$

The set of worlds where the cats who ate are the same as the cats who ate in the actual world.

Question extension with situations

(The checklist shows) which cats ate.

$\lambda s\ (\lambda x\ (cat(x)(s)\ \&\ ate(x)(s)) =$

$\quad \lambda x\ (cat(x)(w_0)\ \&\ ate(x)(w_0)))$

The set of possible situations where the cats who ate are the same as the cats who ate in the actual world.

Rephrasing Fine

Scalar implicature arises from the presumption that a statement is exemplified by a truthmaker for the extension of the question under discussion.

Kratzer 2003, 2007 (2019).

Which parts of her body are in the water?

Her right foot or her left toes.

Which parts of her body are in the water?

One of her feet.

Some of her toes.

Underinformative, but still on topic

You: What's in the water here?

Me: Both of her feet, two feet, somebody's feet, somebody's hands or feet, something, …

"The first thing to notice is that an exhaustive interpretation does not always completely resolve the question the answer addresses."

Schulz & van Rooij 2006.

Some

The inference from *some* to *some, but not all*

John Stuart Mill

“If I say to any one, “I saw some of your children today”, he might be justified in inferring that I did not see them all, not because the words mean it, but because, if I had seen them all, it is most likely that I should have said so: even though this cannot be presumed unless it is presupposed that I must have known whether the children I saw were all or not.” Mill 1867, 501.

Proposal

The words do mean it, but that doesn't mean much. An effect will only come in via maximalization.

Some (of the) dots are red.

$\lambda s\ \exists x\ (\mathrm{dots}(x)(s)\ \&\ \mathrm{red}(x)(s)\ \&\ x < \sigma y\ \mathrm{dots}(y)(s_n))$

Default resource situations: w_0 or the situation we are talking about.

Maximalization

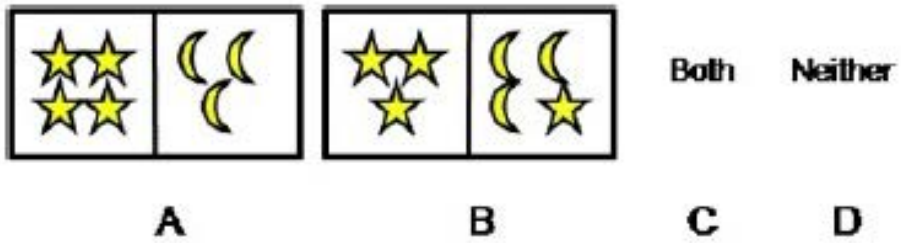
John owns some sheep and Harry vaccinates them in the spring.

Evans 1980, 339.

Whenever Harry gets some sheep, he has them vaccinated within a week.

Please indicate which shape is best described by the sentence below

Some of the stars are in the box on the left.



Resource situation is w_0

Resource situation is the shown situation

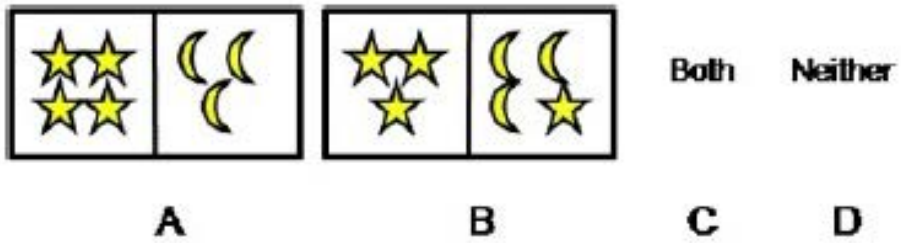
Clifton & Dube 2010

Choice Option			
A	B*	C ("both")	D ("neither")
3 (2)	71 (6)	24 (5)	2 (2)

Table 1 Percentages of choices of each option (standard errors in parentheses), Experiment 1. "Strengthened" alternative indicated by *

Please indicate which shape is best described by the sentence below

Some of the stars are in the box on the left.



Resource situation is w_0

Resource situation is the shown situation

Subjects who choose both A & B may consider both accessible resource situations.

Choice Option			
A	B*	C ("both")	D ("neither")
3 (2)	71 (6)	24 (5)	2 (2)

Table 1 Percentages of choices of each option (standard errors in parentheses), Experiment 1. "Strengthened" alternative indicated by *

Illusion of implicature cancellation

It’s unlikely that you didn’t eat some of the cake.

If there is no situation where you ate a proper part of the cake, there also can’t be a situation where you ate all of the cake.

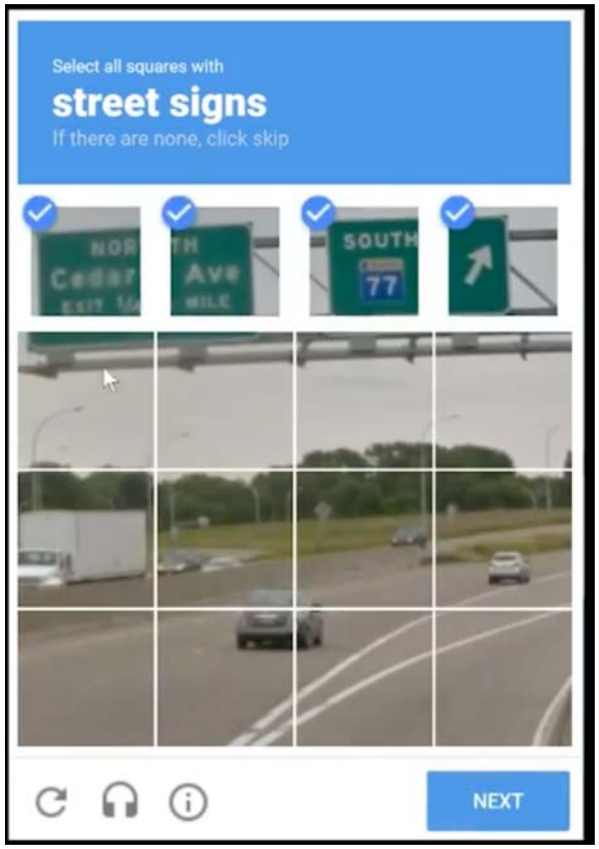
Truthmakers?

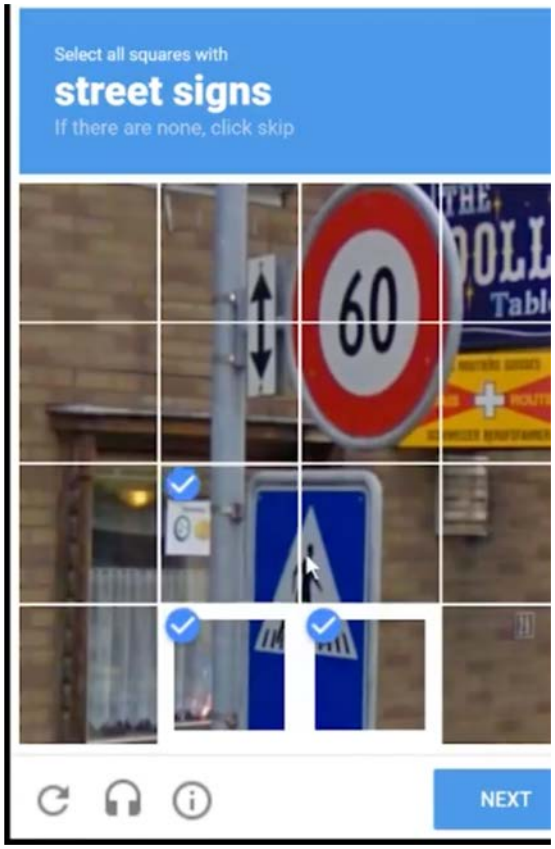
Some of the street signs were bilingual.

Not: a minimal situation with some bilingual street signs.

What about: A situation that has no part (down to a certain grain) without bilingual street signs.

Situations with street signs





Assessment of the situation

“ … experimental evidence supports the introspective evidence that the doubly-bounded *exactly* reading of numerals does not have the same underlying basis as the doubly-bounded *not all* reading for ‘some’.”

Breheny 2019, 52.

Disjunctions as sets of alternatives

Zimmermann 2000, Simons 2005, Alonso-Ovalle 2006.

Inquisitive Semantics.

Minimalization of disjunctions

- Every time you break a cup or a saucer or both, we will charge you £5.

- $p \vee q \vee (p \& q)$

- The set of truthmakers for a disjunction is the union of the truthmakers for each disjunct.

Disjunctions as sets of propositions

Disjunctions denote sets of propositional alternatives.

Zimmermann 2000, Kratzer & Shimoyama 2002, Geurts 2005, Simons 2005. Alonso Ovalle 2006, 2008, 2009, Aloni 2007. Inquisitive Semantics, e.g. Ciardelli, Groenendijk & Roelofsen 2015. Overview in Aloni 2016.

A generalization

A range of propositional operators seem to affect each disjunct separately when they operate over a disjunction.

$\Diamond$ (p $\vee$ q)

$\Diamond$ {p, q} = {$\Diamond$p} $\cup$ {$\Diamond$q} = {$\Diamond$p, $\Diamond$q}

tm (p $\vee$ q)

tm{p, q} = tm(p) $\cup$ tm(q)

Finale

Once we recognize the role of truthmakers, accounts of the poster examples of apparent scalar implicatures (*some*, *or*, numerals) fall out without any special machinery .

So-called “scalar implicatures” might not be a natural kind: Degen 2015, van Tiel et al. 2016, Breheny et al. 2019.